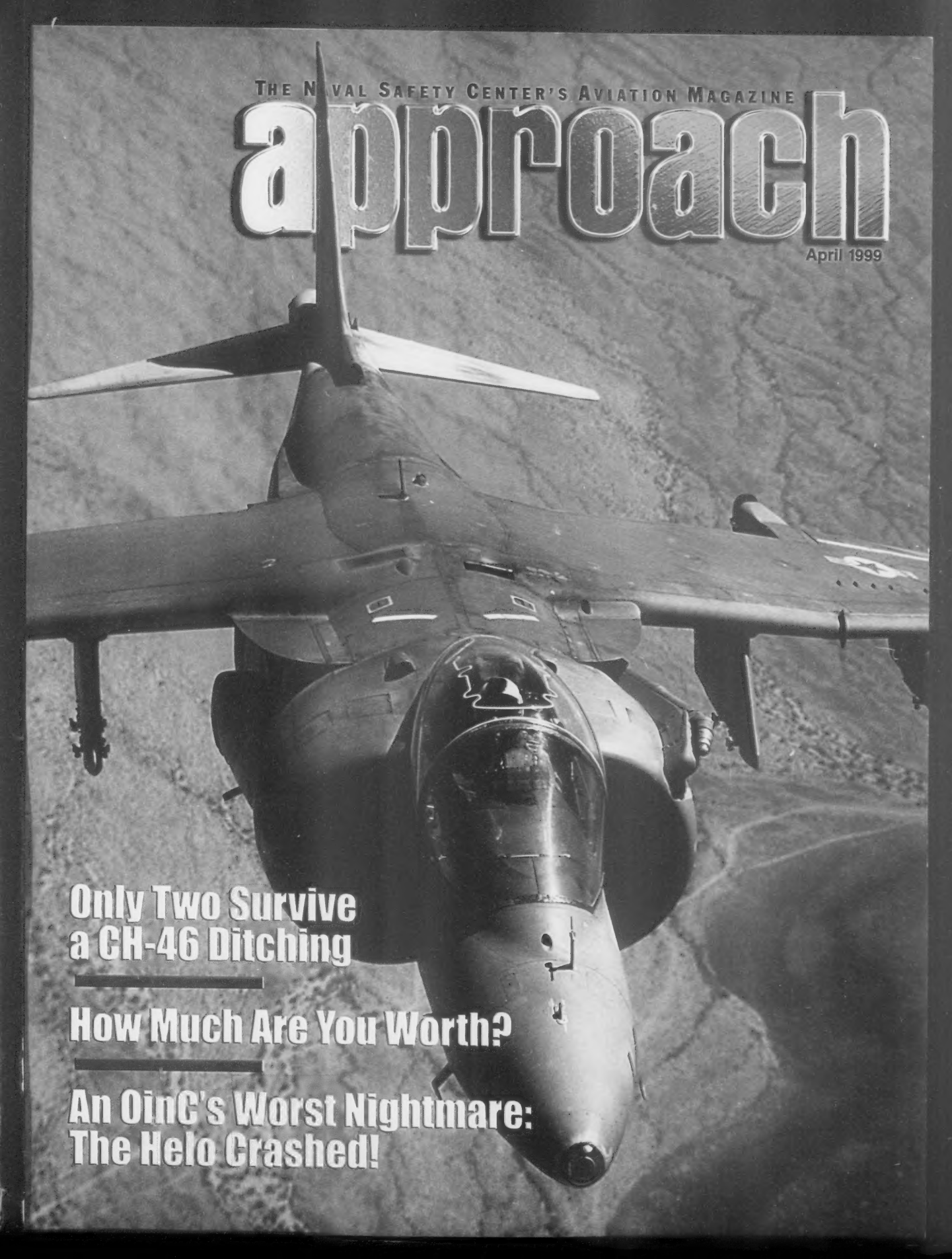

THE NAVAL SAFETY CENTER'S AVIATION MAGAZINE

approach

April 1999

Only Two Survive a CH-46 Ditching

How Much Are You Worth?

An OinC's Worst Nightmare: The Helo Crashed!

inside approach

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April, 1999 Volume 44, No. 4
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Photo by Ted Carlson
RAdm. R.E. Besal **Commander, Naval Safety Center**
Bill Mooberry **Executive Director**
John G. Mahoney **Head, Media Department**
Derek Nelson **Editor-in-Chief**
LCdr. Mark Enderson **Head, Graphics Division**
***Approach* Staff** (757) 444-3520 (DSN 564)
Peter Mersky **Editor**
pmersky@safecen.navy.mil Ext. 7257
Laurinda Minke **Design and Layout**
lminke@safecen.navy.mil Ext. 7249
John W. Williams **Illustrator**
jwilliams@safecen.navy.mil Ext. 7250
Ginger Rives **Distribution** (Magazines and Posters)
vrives@safecen.navy.mil Ext. 7256
Comments and Contributions Commander, Naval Safety Center
Attn: *Approach*, Code 712
375 A St., Norfolk, VA 23511-4399
Publications FAX (757) 444-6791
Col. Roger Dougherty, USMC **Aviation Safety Programs Director**
rdougher@safecen.navy.mil Ext. 7225
Cdr. Kimball Thompson **Aircraft Operations Division**
kthompso@safecen.navy.mil Ext. 7203
LtCol. Thomas Meyers, USMC **Aircraft Mishap Investigation Division**
tmeyers@safecen.navy.mil (Ext. 7236
Capt. James Fraser **Aeromedical Division**
jfraser@safecen.navy.mil Ext. 7228
Homepage address www.safetycenter.navy.mil
NAVSAFECEN BBS (757) 444-7927 DSN 564
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features

departments

Two Out of Four

by Lt. M. Trent Wolfersberger

I WON'T FORGET THE DAY MY H-46 FAILED ITS FLOAT TEST.

We had briefed for a 0930 vertrep to a destroyer. A cold rain pelted us, and the seas had 6-to-8-foot swells. We engaged rotors at 0935, with winds 40 degrees port at 18 knots. Once airborne, we reported ops normal and proceeded to the forecastle of the DD to pass a package out to the deck crew. The ship's motion required more control movements to hold a stable hover, but the conditions were more than acceptable. After that first hover over the destroyer, we transitioned back to the deck of our T-AFS to pick up the first load.

As we steadied over the load, the hook-up man went under the helo. Something drew my attention inside to the instrument panel—the No. 2 power-turbine-speed needle was falling through 92 percent, with No. 1 rotor speed and turbine speed around 99 percent.

The hook-up man was under the belly, and we were over the loads with no place to land. I had to get the aircraft clear of the deck. My copilot armed the emergency throttle as I increased collective to get the mainmounts clear of the loads on deck. We cleared the deck and were around 60 feet with a slight tailwind.

My pull on the collective had bled rotor speed from 100 down to 80 percent. I called 80 percent over the radio as I nosed forward and traded what altitude I could for some airspeed. Looking at these numbers in hindsight, I realize I had nothing to trade, but at the time I was hoping for a better than even exchange rate. I thought I was going to be able to fly the bird out.

I yelled over the radios for true winds, and tower called 120. I was probably passing through 30 feet at this point, holding the 80 percent rotor speed I started with, and still descending. My airspeed wasn't building much, and my options were thinning. I looked at my RMI showing 270 and put in a gradual bank to the left.

I was barely into my turn as I closed within 20 feet of the swells. I reduced the bank and tried to pump the collective, allowing the rotor speed to decay and build back up, hoping for something. At about 15 feet, as rotor speed passed 70 percent, I decided to ditch the aircraft and called, "In the water!" on the radio three times. I probably had 20 knots of airspeed, and it took a good amount of back stick to dissipate the speed in the precious few feet before we hit the water.

I began settling the aircraft with the seas coming from our starboard beam. We were slightly nose up, with ground speed near 5 knots as a wave grabbed the right stub-wing and pulled us in. The aircraft rolled right immediately. I didn't feel any violent motion. The roll rate and rush of water felt just like the helo dunker, but not as abrupt. The water came at my face from the right side. We had rolled past 90 degrees toward inverted when I got my HEEDS in my mouth.

On my first breath, I aspirated water, then exhaled forcefully to clear my HEEDS. I started breathing normally and relaxed.

My primary exit was the jettisonable cockpit door, which wouldn't open. I don't know if the frame was warped or if I was fighting too much water pressure, but it just wouldn't go. I must have tried seven times before I started for my secondary exit. I unstrapped and with my reference point still in hand, I started to cross the cockpit. I ran into my copilot who was still in or near his seat. I assumed he couldn't get his door out, either.

I let go of my reference and promptly got turned around in the cockpit. I was disoriented now. We still must have been near the surface, because the cockpit was filled with a bright, blue, chalky light. Then I remembered something that saved my life, a story about an H-60 that flipped off a flight deck. The pilot got stuck in the chin bubble because he swam toward the light. A crewman pulled him out. It was all I could do to fight my instinct to go to the now-fading light.

I looked for the darkest part of the cockpit and started toward it. It was reassuring to feel the circuit breakers of the main distribution panel. I had just taken my last breath from the HEEDS and was on my way aft into the cabin. My right leg got stuck on something, and I started to panic. Three or four strong pulls freed my leg.

As I pulled into the main cabin, I saw blackness and one dark, murky, blue patch of light to my right. The HEELS lights did not come on. (Helicopter Emergency Egress Lighting System is designed to outline emergency exits with a border of lights after a significant drop in rotor speed.) My lungs felt like they were going to implode as I exited through the main cabin door. I saw a rotor blade on the forward head below me and blue light above. The bird was sinking quickly, and I had a long way up with no air. I didn't pull my lobes because I kept thinking that something might get caught. I pulled six to 10 good strokes before I broke the surface.

I inflated my LPU as I gasped for air. My crew chief was the only other member of my crew to get out. When I surfaced, he immediately grabbed me from behind. We hooked our lobes and began signaling. He spent three pencil flares. I used one day and one night end of a flare. I tried my PRC-90, but no one answered. The RHIB boat picked us up within 10 minutes and took us to the DD.

My crew chief wasn't hurt, and I had burst a minor blood vessel in my left ear, which probably occurred on my ascent.

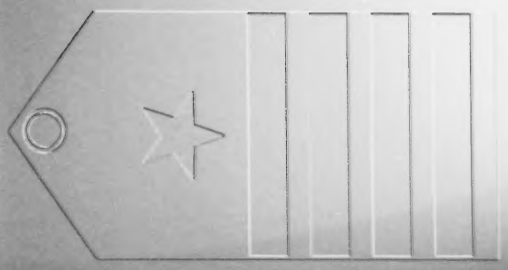
Why didn't the other two crewmen get out? I will never know for sure. I had gone through swim-refresher training about two months earlier. After several previous engine failures, I took swims and my last two egress drills a lot more seriously. I stayed relaxed and used my procedures. I learned that primary and secondary exits may not be enough. You need to know them all. And I again proved the value of HEEDS.

As helo bubbas, we all go through the same egress and physiology training. When things get ugly, this training may be our last resort. Know your procedures cold.

Lt. Wolfersberger flies with HC-8.

Here's One Guy Who Won't Fly With Us Again

by Cdr. J.R. Russell



WHILE WE WERE FORWARD DEPLOYED about a year ago, we had an incident that could have turned into a disaster if it had not been for an Air Force E-4 who stuck to his guns when everyone else chickened out.

Everyone knows that the EA-6B is a four-seat jet that has been known to have a dual role as a "taxi." During our expeditionary deployment last year, we assumed that role several times. On one of these occasions, a junior crew of three lieutenants had a chance to ferry an O-6. This senior passenger had to attend a meeting and then fly back to home base.

The flight over went without a hitch. The O-6 went to his meeting, and the JOs went for lunch. As they chowed down, the weather rolled in, and when they got their weather brief, the Air Force E-4 told them, "It's one hundred and a quarter, sir."

The JOs did what we've all done in that situation: they grabbed a seat in base ops and read two-year-old copies of *People* magazine.

When the O-6 arrived, he was ready to go home, but the crew told him of the weather dilemma. The captain replied, "That's OK, you have a special, right?" Then the fun started. The O-6 began pressuring this junior crew with some classic "get homeitis." He asked the E-4 about the weather and when he heard it was 100 and 1/4, he told the weather guy that it was "at least three hundred and one."

The weather guesser stood his ground and did not oblige the captain. The O-6 called home base and got a special for the pilot. The crew was now cleared to go. The crew dragged their heels long enough, and eventually, the weather improved and an uneventful flight got the O-6 home for his dinner party.

Lots of folks will read this and say this was absurd and should have never happened. This type of situation occurs more than it should, in many different forms, i.e., getting ready for deployments, FCFs, sortie-completion rate records, and the "get it done" attitude that we all have.

The troopers and aviators are doing their best with ORM, and it is working. So how about the folks at the top of the food chain? ORM is for us, too. As leaders, we have to make sure we don't lapse into a "do as I say and not as I do" mode of operation.

Cdr. Russell is the CO of VAQ-133.

> ...we had an incident that could have turned into a disaster if it had not been for an Air Force E-4 who stuck to his guns.

A Midair...

by Lt. Justin Bates

WE PUT OUR LIVES IN THE HANDS OF OUR maintainers every day. Have you ever thought about how much power air-traffic controllers, tower and ground controllers have over our lives, too?

I learned on one flight that tower and ground controllers can have a huge effect on a flight if you let them.

After the last engagement on an ACM hop in the whiskey area, I was joker fuel and my lead, who was 20 miles in trail, sent me home as a single. As a new fleet aviator, two months out of the FRS, and with a six-week at-sea period under my belt, any time flying as a single was great.

I set up for the break on 18R at Cecil Field, and thought, "What a great job."

The break and landing went fine. Nothing could go wrong now.

After I landed, tower asked me to expedite my rollout for an aircraft at 4 miles for 27L. I wasn't sure what that meant, since 18L and 18R were the active runways. I looked to my left and sure enough, a plane was making an approach to 27. I assumed he was just doing a practice GCA and would go around at his missed-approach point.

I cleared the runway still unsure of the approaching pilot's intentions, but I wasn't worried. I dismissed the questions in my mind as I called base and told them I was on deck. It was my lucky day—no pits, just straight to the line. I called ground and got clearance to my line.

I was going through my standard post-landing checklist, turning equipment off and safing my ejection seat, as I approached runway 27L. Just as I taxied onto the runway, a thought popped into my brain: "What happened to that jet approaching twenty-seven?"

I looked to my right and was shocked to see an FA-18 that had just landed. I jumped on the brakes. At 16 knots ground speed and no anti-skid, I quickly locked up the brakes. I felt the plane skid forward, but I didn't blow a

"What happened to that jet approaching twenty-seven?"

tire. At this point, I realized by the time the aircraft skidded to a stop, I would be in the middle of the runway. I could see the other plane approaching rapidly and knew I had to make a quick decision.

I slammed the throttles into afterburner and prayed the engines would spool up quickly enough for my aircraft to accelerate out of the way of the approaching Hornet. It worked, and the other Hornet slid by behind me. The closest point of approach on the runway couldn't have been more than 500 feet, much too close for my comfort.

With my heart pounding, I wondered, "Where did things go wrong?"

Coordination with the tower and between the tower and ground controllers could have prevented this scare. In single-seat aircraft, the "crew" in crew coordination is everybody involved in getting my aircraft from point A to point B and back. I should never have accepted being unsure of what was going on around me. I should have asked the questions that were going through my head.

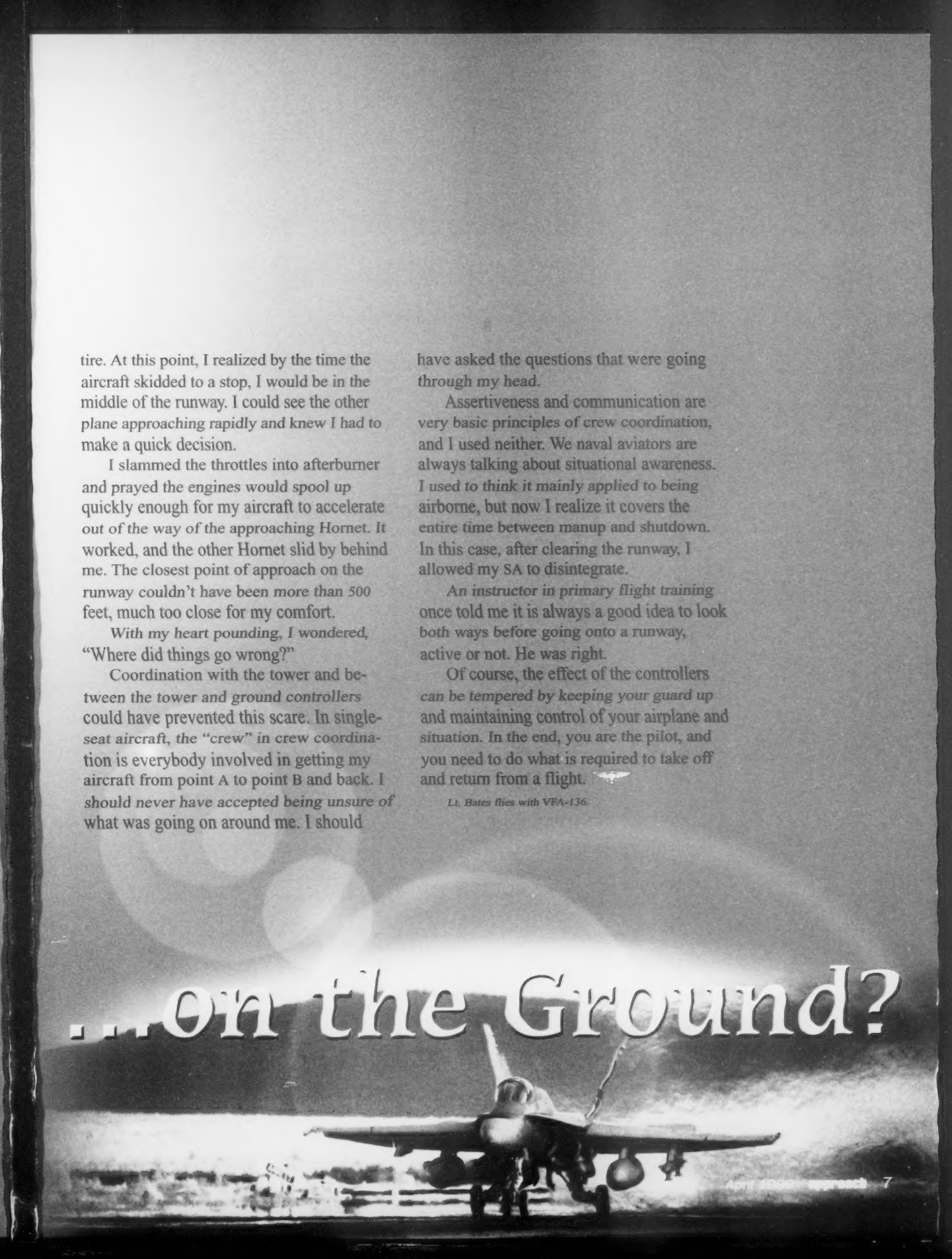
Assertiveness and communication are very basic principles of crew coordination, and I used neither. We naval aviators are always talking about situational awareness. I used to think it mainly applied to being airborne, but now I realize it covers the entire time between manup and shutdown. In this case, after clearing the runway, I allowed my SA to disintegrate.

An instructor in primary flight training once told me it is always a good idea to look both ways before going onto a runway, active or not. He was right.

Of course, the effect of the controllers can be tempered by keeping your guard up and maintaining control of your airplane and situation. In the end, you are the pilot, and you need to do what is required to take off and return from a flight.

Lt. Bates flies with VFA-136.

...On the Ground?



Chris Buhlmann

tealth Checklist

by Lt. Grant Haskin

"DID YOU DO THE CHECKLIST?" That's the first question my crew and I would hear from the guys at the long green table if our near midair had been a little closer.

A week into high-tempo, battle-group work-ups, my crew had the dusk patrol. Our mission was fairly simple: Continue to provide the battle group with an after-hours surface-surveillance picture. Finding ourselves once more smack in the middle of the blue-versus-orange conflict, we were doing our best to remain stealthy to avoid detection by the evil blue force.

After hours of visually identifying surface contacts (as visual as you can get at night with no NVDs), we found ourselves re-identifying the same contacts over and over. The frustration with our surface brethren began building, but we pressed on late into the night.

After 3.5 hours of SSC, we headed back to mother for our scheduled hot pump. As the H2P, I was in the right seat flying while my copilot, the HAC, was in the left seat completing the landing checklist. We shot the approach, landed, and after chocks and chains, began to take on fuel.

Immediately after fueling, I called for the takeoff checklist. "Checklist complete," my copilot responded. Since the winds were to port, I had the takeoff from the right seat. After coming up and aft, I began my pedal turn to port to get the nose of the helo into the wind. Just as I did, something caught my attention out the right window—an anti-smack light, no, make that two anti-smacks, passing down the starboard side of the ship.

The aircraft in question was at about 100 feet, roughly the same altitude as us, just 20 to 30 yards off the side of the ship. I got an eyeful of an H-3 passing right down our starboard side within approximately one rotor diameter. We held our hover and watched as the other helo whirred up and away from mother.

After steadying up, with our hearts beating a little faster than they usually do after a night takeoff, I called for the after-takeoff checklist. I kept wondering how could that idiot have not seen us; what was he thinking? Suddenly, thoughts of the checklist came to mind.

"Are our lights on?" I asked my copilot. He didn't even have to look up at the position of the light switches to realize our mistake. We had been flying stealth and trying to avoid detection by the enemy force, and that's exactly what we'd done. So well, in fact, that it almost killed us.

For the rest of the flight, all I could think about was what if. What if the winds had been to starboard? The answer, I kept thinking, was that we could have lifted into a hover, pedal-turned to starboard, and flown right into the other aircraft. That scared the hell out of me.

The lesson learned is simple: Doing a checklist means actually checking things. Never skim over any item. As a crew, we found ourselves in an unusual flight regime (lights off), and my copilot assumed when he got to "lights" on both the before-landing and the takeoff checklists, they were where they needed to be. He was wrong, and we almost paid the ultimate price.

Lt. Haskin flies with HSL-42.

When Thin

by Lt. William Palermo

IT WAS THE EARLY DAYS OF A LONG CRUISE and a critical time to update flight-training qualifications. Almost two months had passed since the detachment's last underway period, so our landing qualifications were close to expiring. The seas were rough because of a distant weather system, not enough to preclude our scheduled RLQ flights, but just enough to make the landings exciting.

When I finally jumped into the helicopter, it was plenty dark. Having completed qualifications for day- and night-landings with two new H2Ps, the aircraft commander commented, "It's good to have another HAC in the aircraft." That was a good vote of confidence, but we had run out of daylight before I had a chance to complete my day landings. My deck landing qual was still current, and I was legal to make night landings. However, my proficiency was down because it had been quite a while since I'd landed on a dark night or in rough seas.

We lifted off and called, "Ops normal." Things started to go downhill fast from there. First, the glide-slope indicator light went out. Night flights are still permitted with one lighting system degraded as long as you can see the horizon, which we could. Then the RAST system started acting up. We waited as the RAST technician troubleshot a problem with the RA cable.

Since I had just jumped in the aircraft, I appreciated the chance for my eyes to adapt to the darkness. We loitered behind the ship at about five miles, a day flag in the instruments, while the TACAN had failed. The ship had no radar problems with the distance-measuring equipment gather, but now the needle wasn't even pointing to home.

At five miles, we couldn't see the ship. A few minutes later, our data link dropped sync, so we asked the crewman to bring up the radar, which he had secured for the bounces.

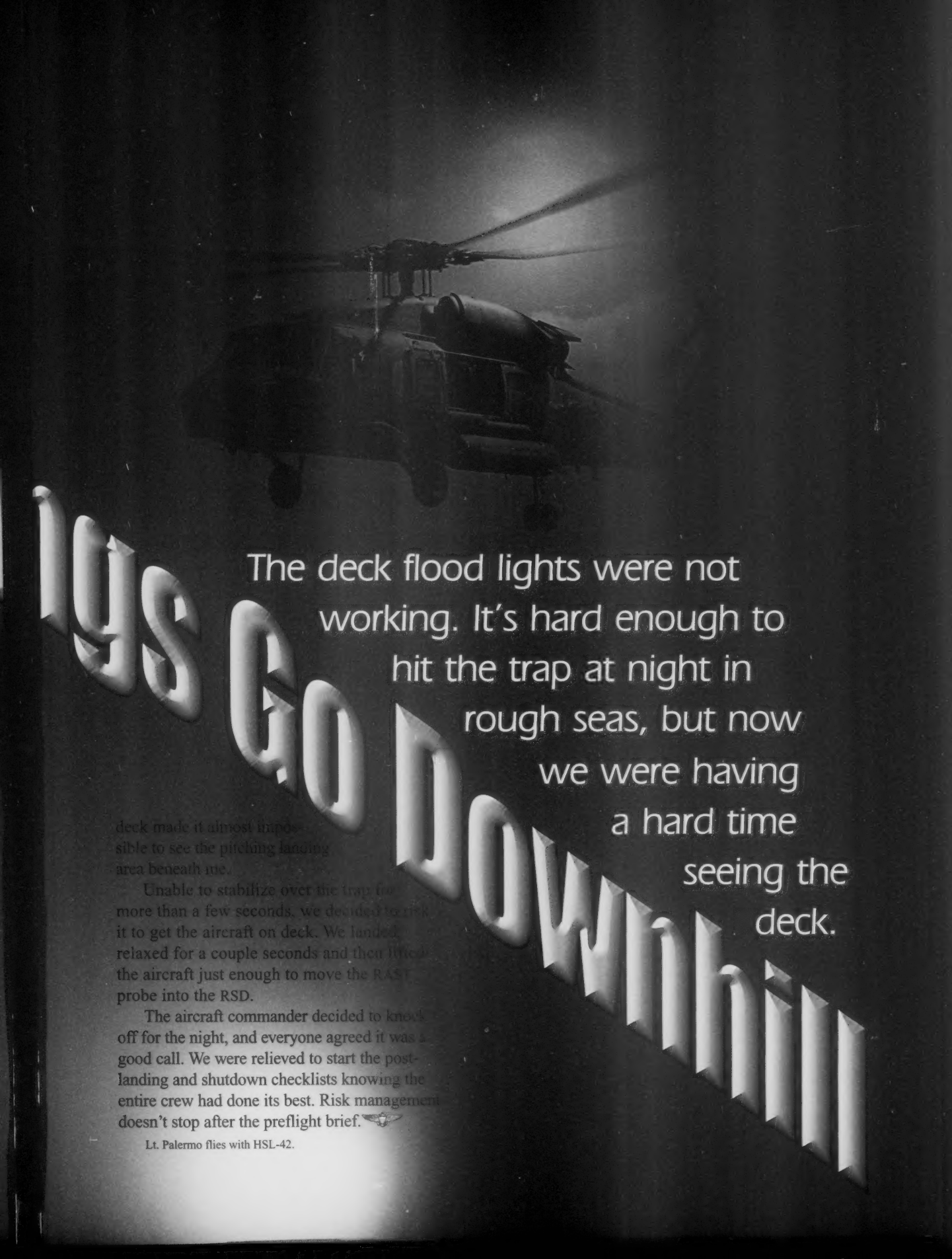
When the crewman started complaining about radar problems, we knew things were getting bad.

We got vectors to home plate from the ASTAC and did an inflight review of Mission Aces (aircraft, crew, environment, situation), our squadron's tool for risk management.

We discussed our technical problems and briefed the approach and landing. Once we were as comfortable as we could be, it was time to make the approach.

I had the controls, and my copilot backed me up on altitude, airspeed, closure rate and, as best he could, on distance from the ship. The aircrewman monitored the navigation parameters cable to back us up on altitude and ensure a safe approach.

We took it nice and slow and arrived over the flight deck with another problem. The deck floodlights were not working. It's hard enough to hit the ship at night in rough seas, but now we were having a hard time seeing the deck. I did the best I could to hover a safe distance from the well-lit [illegible] but the poorly lit



Lights Go Downhill

The deck flood lights were not working. It's hard enough to hit the trap at night in rough seas, but now we were having a hard time seeing the deck.

deck made it almost impossible to see the pitching landing area beneath me.

Unable to stabilize over the trap for more than a few seconds, we decided to ... it to get the aircraft on deck. We landed, relaxed for a couple seconds and then lifted the aircraft just enough to move the RAST probe into the RSD.

The aircraft commander decided to knock off for the night, and everyone agreed it was a good call. We were relieved to start the post-landing and shutdown checklists knowing the entire crew had done its best. Risk management doesn't stop after the preflight brief.

Lt. Palermo flies with HSL-42.

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"But, Sir, the Helicop

by LCdr. Tom Graziano

I WAS THE DET OINC EMBARKED IN A FRIGATE on a Westpac cruise bound for the Arabian Gulf. We had encountered unusually rough seas from the start of our deployment, yet we were looking at a beautiful, sunny day in the Northern Pacific.

Just seven days earlier, our frigate had steamed 1,100 miles north of PIM on emergency tasking for a medevac. Despite a sea state of 4 to 5, and winds more than 55 knots, our Seahawk had launched and completed a high-hover and hoisting, then transferred the patient more than 200 miles over open ocean to Midway Island, where he was flown back to Honolulu. He lived, and the aircrew subsequently received the Air Medal.

Now the ship and det were in high spirits. We weren't planning on flying, but faced with such a perfect day and knowing we were behind on flight hours because of cancelled flights over the past two weeks, we decided to fly one bag with the crew that had the least flight time.

ER67 launched and flew back to home plate on time for a session of much-needed, recovery-assist (RA) landings. There were many odd circumstances that day, some of which worked heavily in our favor. I was working on O-3 fitreps in my stateroom when flight quarters was called. I expected a long session because of the RAs; we also had a crash-and-smash drill planned after flight quarters.

When the ship took a hefty roll to port, I noticed but wasn't worried. We were at pitch-2, roll-4 at the time (nothing hard core when dealing with an FFG, and well within the NATOPS envelope for day RA recoveries).

Shortly thereafter, the crash alarm sounded, and I thought, "OK, there goes the drill right on time." But the alarm kept going and going and going. I finally picked up the phone and called the bridge watch, perturbed that they didn't seem to realize when enough was enough on the alarm.

The Sailor at the other end promptly replied, "But, sir, the helicopter *really* crashed!" My heart fell into the pit of my stomach.

I raced to the flight deck, and there was our pride and joy, ER67, lying on her left side and hanging precipitously over the port edge of the flight deck. When I heard the word "crash," I expected an empty flight deck, but it was surreal seeing the fuselage, banged up and exposed like that. The number one engine was crushed, and the main-rotor blades, tail-rotor paddles, and the tail-rotor gearbox were completely gone. What had happened?

The crew had secured from one series of RAs and was releasing tension on the cable while simultaneously making what turned out to be a lengthy control swap. The bust in the equation was that the rapid-securing-device (RSD) beams were open, not closed, a NATOPS no-no. When closed, these beams securely hold the helicopter on deck.

Without warning, the ship took a rogue wave from the starboard, aft quarter, which raised the ship's stern and rolled it to port 26—yes, 26—degrees!

Thinking about the SH-60B's static and dynamic rollover limits, and cross-slope limitations, it was easy to see how the aircraft rolled left and exceeded the limit. The RA cable at minimum tension couldn't stop it. The main-rotor blades struck the flight deck first, disintegrating quickly and allowing the fuselage to hit the deck, crushing the No. 1 engine.

ter *Really* Crashed!"

The torque-generating motion of the situation destroyed the tail section (gearbox and paddles), while spinning it off the deck and out over the water. The fuselage was left teetering over the port side of the flight deck. Later, we reviewed the flight-deck video, and it was an amazingly quick sequence, which I have seen more times than I care to remember. The mishap occurred in less than five seconds.

If the helo had been operating in the port RSD instead of the starboard RSD, or the RA cable had not been attached, the aircraft would have rolled off the port side and into the ocean.

As it was, all the crew got out, and the aircraft remained on the flight deck to be salvaged to fly again. (It's in the mod-hangar at North Island, scheduled to fly by mid-summer.) The flight-deck crew, standing by for the crash-and-smash drill, had AFFF foam on the deck and aircraft within one minute of the crash. We also had a doctor temporarily on board, who tended to the aircrew.

I wanted to say, "Hey, see that red flicker in my eye? That's my career-dissipation light, and it just went into overdrive." (Anyone see "Backdraft"?) I was so thankful for what did happen instead of what could have happened.

Although the aircrew was junior, no one could fault the HAC for how he reacted. I didn't. He didn't pull power and just rode out the roll. Some (including myself) might have pulled power to clear the deck but along with the roll, that action may have triggered an even more disastrous dynamic rollover, putting the aircraft over the side.

I had a second-cruise LSO in the shack with a new 2P under instruction. He anticipated the pilot's call for minimum tension and cable release. He tried to speed things up by opening the beams with the cable at minimum instead of maximum tension, and it cost us. How many LSOs may have done similar things in the past without a major complication like that rogue wave?

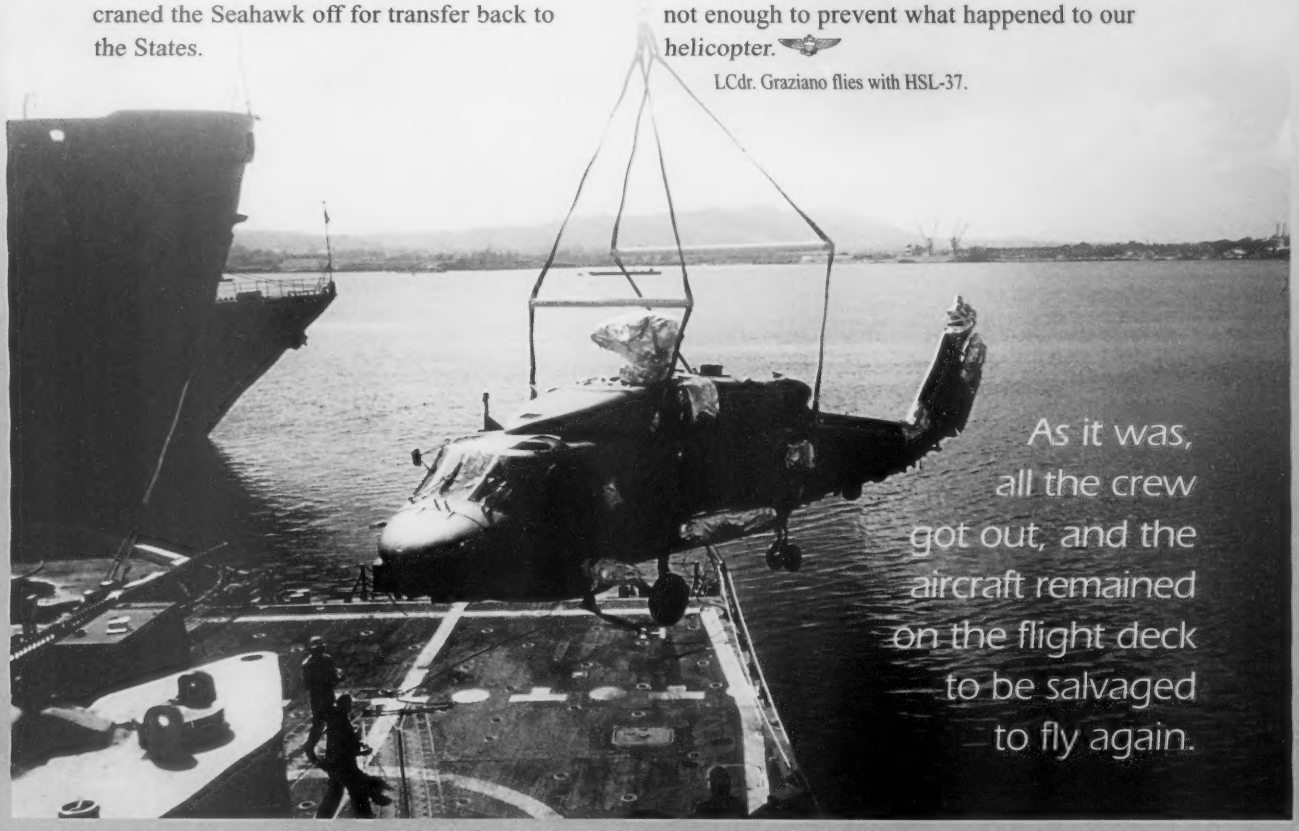
Immense praise has to go to the ship's crew for their assistance and coming up with an innovative plan for righting the aircraft using 20,000-pound-test chains and the stern capstans. We sailed immediately for Guam where we craned the Seahawk off for transfer back to the States.

For those H-60 drivers who saw the NATOPS change to Chapter 8 this past winter about ship operations and RAs, that lesson comes from this experience and the recommendation in the long mishap report to change NATOPS procedures.

It bothers me that the real issue of having the beams open or closed on each landing was never resolved; it's still up to the individual crew or LSO. I was new to the Mk-III community, having flown H-2s, and knew that keeping the beams open for successive free-deck landings is standard procedure. I've also heard the stories about RSD overuse and breakdown, but I can tell you that with the beams open and especially without the cable, you are at the mercy of the sea (especially at night). Do your own risk management.

We were day, VMC, and had no idea that wave was coming. It's your call, so be smart and close the beams on each landing, especially if it's night, you expect any delays, or the cable has been released. We proved that the cable alone is not enough to prevent what happened to our helicopter.

LCdr. Graziano flies with HSL-37.



As it was, all the crew got out, and the aircraft remained on the flight deck to be salvaged to fly again.


PH2 Matthew J. Thomas
02

Milestones

Class A Mishap-free Flight Hours

Command	Date	Hours	Years
VMGR-252	11/16/98	360,000	39
VP-46	01/30/99	244,000	35
HMH-462	02/15/99	35,000	10.8
HSL-44	02/17/99	95,000	11
4thMAW	02/19/99	100,000	2.4
VMGR-234	02/19/99	85,000	27
HMM-774	02/19/99	55,000	28
VMFA-142	02/19/99	55,000	20
HMLA-775A	02/19/99	40,000	16
VMGR-452	02/19/99	35,000	10
HMH-769	02/19/99	35,000	14
VMFA-112	02/19/99	30,000	11
VAQ-138	02/23/99	29,700	17
VFA-81	02/18/99	20,700	5
VFA-82	02/24/99	48,035	12
VAQ-135	02/24/99	5,400	3
VPU-1	02/27/99	31,000	19
VAQ-131	02/14/99	2,620	2
HMLA-169	03/09/99	35,000	6.9
HS-6	03/11/99	37,000	10
VMA-223	03/11/99	37,000	9
VFA-87	03/11/99	80,350	8
HS-3	03/13/99	5,900	2
VP-10	03/15/99	165,000	26
HS-8	03/15/99	58,000	18
VAQ-139	03/19/99	11,680	7
HS-14	03/18/99	13,400	4

Class A Mishaps

The following Navy and Marine Corps Class A flight and flight-related mishaps occurred since 8 January.

Aircraft	Date	Command	Fatalities
FA-18C (two)	01/20/99	VMFA-212	0

A pair of Hornets collided while flying in formation over water.

AW-1H	02/10/99	HMM-365	0

A Super Cobra crashed in the Pamlico Sound during a night ordnance training flight.

FA-18C	03/10/99	VMFA-212	1

A Hornet disappeared from a radar screen during a night NVG CAS mission.

SH-60B	03/23/99	HSL-43	0

A Seahawk crashed into the water during a functional check flight.

Class A Flight Mishap Rate

	FY99* thru 3/31/99		FY98 thru 3/31/98	
	No.	Rate	No.	Rate
Navy/Marine	9	1.29	14	1.90
All Navy	4	.76	9	1.58
All Marine	5	2.86	5	2.95
NAVAIRLANT	1	.70	2	1.33
NAVAIRPAC	2	1.38	3	1.88
MARFORLANT	1	1.67	3	5.42
MARFORPAC	4	4.91	2	2.47
NATRACOM	1	.61	3	1.66
NAVAIRRES	0	0.00	0	0.00
4thMAW	0	0.00	0	0.00
NAVAIRSYSCOM	0	0.00	1	6.60
NAVSTKWARCEN	0	0.00	0	0.00

*FY99 data subject to change.

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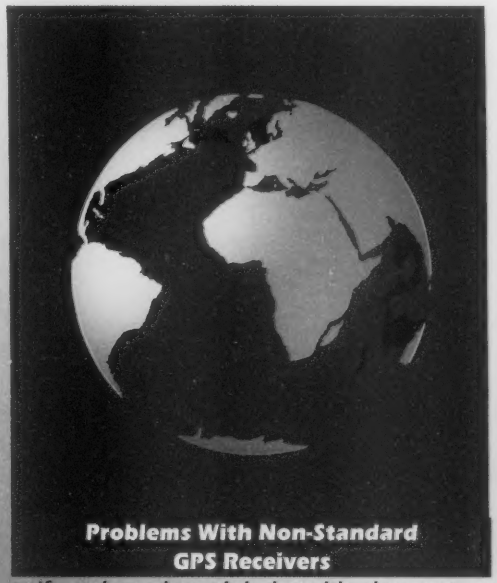
Visit our web site at:
http://www.safetycenter.navy.mil
For questions or comments, call Peter Mersky
(757) 444-3520 ext. 7257 (DSN 564)

POP-UP



Problems With Non-Standard GPS Receivers

If you're using global-positioning system (GPS) receivers that were not obtained through the GPS joint-program office or Space and Naval Warfare Systems (SPAWAR) Command, you may have some problems this year. These receivers may give erroneous data on August 21, 1999, and January 1, 2000 (Y2K). The first date, called the "end-of-week (EOW) rollover" problem, is unique to GPS. It happens because the receiver's built-in almanac approximates an orbit position that doesn't match its true orbit position. On August 21, 1999, at 0000Z, the GPS week-data field will roll over to zero. Non-EOW-compliant receivers will then have problems converting GPS time to calendar time. The Y2K problem will affect GPS receivers, which use two digits to represent the year. On January 1, 2000, the year rolls to "00" but equip-

Air Wing

ment that isn't Y2K-compliant won't be able to differentiate it from the year 1900. Receivers procured through the GPS joint-program office or SPAWAR have been verified and certified Y2K- and EOW-compliant. You can find a list on the GPS joint-program office Y2K web page: http:gps.laafb.af.mil/y2000. Only these GPS receivers should be installed in mission-critical or safety-related equipment. Other receivers should also be verified as EOW- and Y2K-compliant.

Old Inertial Reels Need Replacement

If you fly an aircraft without ejection seats the inertial reels in the seats may not restrain you in a mishap, resulting in serious injury or death. A recent study of P-3 inertial reels (MA-1, 2,6,8) reported a failure rate of 25 to 50 percent. Citing this information, Marine Corps C-130 squadrons have called for funding, procurement and the incorporation of the new MA-16 inertial reel.

Shortening F-14 Holdback Improves Launch-Bar Positioning

The catapult throws you off the deck, accelerating from zero to 130 knots or more in a few seconds. But if the launch bar does not seat properly in the shuttle assembly, and goes undetected, fear, and an impromptu ride up the rails can quickly replace the normal exhilaration. Training and improved shuttle designs have made such occurrences rare, but they still happen ("What Happened to My Beautiful Day" by LCdr. Tom Halley, Sep. '98). Naval Air Warfare Center Aircraft Division Lakehurst recently tested a new equipment modification that shortened the F-14 holdback bar. This change places the launch bar closer to the spreader throat during hookup and before the tensioning stroke, reducing the chance for a bad hookup. Aircraft testing has been completed. Fatigue life testing is ongoing. Once all Tomcat holdbacks have been modified, the spreader sideplates on the shuttle will be cut back flush with the spreader throat so that everyone can see the tensioning phase of the catapult launch more clearly.

Edited by LCdr. Mark Enderson. Contributors can contact him at (757) 444-3520 Ext. 7245 (DSN 564). E-mail address: menderso@safecen.navy.mil

Naval Safety Center
www.safetycenter.navy.mil
(757) 444-3520 (DSN 564)

LESSONS LEARNED

Flying Into Icing Conditions and Mountains: A Deadly Combination

by LCdr. Bill Sass

It seemed like a good deal—four pilots and an aircrewman flying to Las Vegas for a weekend. The helicopter aircraft commander (HAC) planned the flight with two pilots riding as passengers.

Even though two other pilots in the squadron had mentioned possible icing conditions, the HAC didn't think the weather would be a problem and, if necessary, he felt they could avoid it.

The previous day, several squadron pilots had encountered moderate icing in the same general area of his route of flight, and they told the HAC. His confidence was unshaken.

His first two-leg DD 175-1 came back with a "Not Recommended" because of bad-weather warnings along the route. A quick attempt at a VFR plan was also rejected, and the crew finally received a single-leg IFR flight plan. While there were red flags waving at every turn, this crew did not think anything could happen to them. Their eagerness and overconfidence blocked out all the warning signs.

The crew launched at 1204. At 1211, they requested a climb from 6,000 to 8,000 feet to escape visible moisture and icing conditions. After clearing the flight to join the airway, the controller assigned them 9,000 feet. At 1256, they requested and were cleared to 10,000 feet to avoid icing. At 1258, they asked for an immediate descent because of ice. Seconds later, they declared an emergency.

The controller cleared the crew to 8,000 feet and asked their intentions. Still in the clouds at 8,000 feet, the crew requested a further descent. The controller told them to turn left immediately and maintain 6,000 feet. The next vector was to turn left to 130 and descend to 5,000 feet.

The aircrew reported they needed to continue their descent to clear icing. The controller told them to continue left to 090. After acknowledging the crew's request to descend further, the controller said to turn right immediately to a heading of 130 and not to go north.

The controller heard no further transmission from the aircrew. They had flown into the side of a mountain, killing all five people aboard.

Lessons Learned:

1. Filing Into Icing Conditions: OPNAVINST 3710.7Q and the NATOPS restrict filing and flying into known icing conditions. This crew, as well as the pilot passengers, knew the weather forecast but filed and flew into it anyway.
2. Aircrew Coordination Training: Communications, critical for making the right decisions, should come from all sources. Several squadron pilots, as well as the forecaster, told the HAC that he shouldn't be flying there. He didn't listen to their warnings and pushed the envelope with deadly results.
3. Risk Management: Signing the flight schedule doesn't mean that the risk-management process is done. The five-steps need to be carried out from before the flight starts until after the aircraft is secured on deck. If this crew had used ORM, they wouldn't have gotten off the ground.
4. Know where you are, whether you are VFR or IFR. Prior to launching, review your VFR sectionals against your intended IFR routing to help you retain situational awareness.

LCdr. Sass is the H-2, H-3 and H-60 analyst in the Rotary-Wing Branch at the Naval Safety Center.

I Can Land This Ba but Where?

by Maj. Arthur Tomassetti

WE WERE APPROACHING THE END OF our six-week deployment to MCAAF Twentynine Palms for a combined-arms exercise. I was the section lead for an AV-8B night armed-reconnaissance sortie using night-vision devices. There was no moon, so we would fly the sortie in starlight conditions. Returning to the expeditionary airfield, we would recover with the airfield lights turned off.

The first sortie would be followed by a night takeoff and landing. The landing site supervisor (LSS) briefed all the players, discussing recovery procedures and airfield setup. We would start with slow-landing (about 120 knots) touch-and-goes, followed by precision rolling-vertical landing at about 60 knots to full stops. Infrared chemlights would mark the edges of the runway and the landing area. The LSS would wear night-vision goggles (NVGs) as well and would initially monitor the landings from abeam the intended touchdown point at taxiway "C." Then he would move to a spot 2,000 feet down the runway to monitor the precision RVLs. Everything appeared well-thought-out at the brief: the buildup approach for the landings, logical lighting,

John W. Williams

This ambient lighting combined with the starlight conditions made the goggles virtually useless...

and enhanced situational awareness for the LSS with use of NVGs.

I had about 1,500 hours in the AV-8B and almost 50 hours on NVGs, so I felt comfortable with the plan.

After successfully completing our armed recce, my wingman and I returned to the EAF. As we entered the landing pattern, it was apparent that the ambient lighting was going to affect the NVGs. Even though the airfield lights were turned off, lights from the adjacent tent city were still on. This ambient lighting combined with the starlight conditions made the goggles virtually useless until about 100 feet AGL on final. My HUD display of the navigation forward-looking infrared (NAVFLIR) image was grainy, but the heads-down NAVFLIR display was clear.

The first landings went well. I was comfortable with the technique of flying what was basically an instrument-approach turn and then using the NVGs once I could see the chemlights marking the sides of the runway. After the first sortie, everybody was comfortable with the setup, and we taxied to the fuel pits to refuel for the second sortie.

With the taxiway lights off, we were having a hard time making our way to the fuel pits. After talking it over with the LSS, we decided to have the tower turn the parallel taxiway lights back on.

We refueled and taxied out. The LSS said we would start off with the precision RVLs because everything had gone so well on the first sortie. He would reposition down the runway after the first landings, because the guys in the LSS vehicle were checking the chemlights.

I made a normal short takeoff and turned downwind. The LSS told me he would be using a laser pointer to mark the touchdown spot for the precision RVL. He would basically run the beam back and forth across the runway. I began the approach turn as before, basically on the instruments.

As I was rolling out on final, I was trying to look for the laser pointer marking the touchdown spot so I could refine my flight path. I made one quick scan on the heads-down NAVFLIR image, which showed the whole airfield as before. The HUD picture was

still grainy but I could make out the straight lines of what I thought was runway.

I finally picked up the laser pointer at about 200 feet AGL and adjusted my flight path slightly. About this time, I began to pick up the chemlights marking the runway edges and made a small lineup correction. With no calls from the LSS, I held what I had on final. Just before touchdown, I noticed a runway-remaining marker out of the corner of my left eye.

The distance looked about right, and I felt sure I was on runway centerline. At about 10 feet AGL, I noticed lots of debris blowing up in front of the aircraft and started to wave off. At exactly the same time, the LSS began making repeated power calls (eight, all together). Wondering if I had FODed the engine, I climbed back to pattern altitude. All the engine indications looked normal, so I minimized my throttle movements while monitoring the engine.

The LSS asked the tower to turn on the lights so he could assess the amount of FOD on the runway before continuing. Meanwhile, I entered the delta pattern overhead. The tower controller had trouble turning on the lights and began sending maintenance personal out to check the electrical boxes.

After about 20 minutes, only half the lights were restored, which showed the first half of the runway was covered with dirt and rocks.

I was still closely monitoring the engine for unusual indications. I tried to figure out what had happened. All I could think was that somehow, in the final part of the approach, I had drifted right and had landed close enough to the edge of the runway to kick up debris.

It was apparent that the remaining lights were not going to be restored quickly, and the sweeper was going to take a while clearing the first half of the runway.We decided I would land using the second half of the runway.

I descended out of the delta pattern and set up for the approach wondering if the engine would go at any second. After landing, I taxied clear of the runway and shut down. After getting out of the aircraft, I immediately took my flashlight and peered down the intake. I saw nicks on every blade of the first stage of the engine.

Looking around the area where I touched down, it was impossible to tell what had happened because of the darkness and FOD. It wasn't until we started the debrief with the LSS that we began to figure out what had occurred.

The LSS said he had the NVGs on, and everything had looked good up until he noticed the debris being kicked up. The other two observers who were with the LSS said it looked like the airplane might have been a little off lineup, but they felt the LSS had a better view with the goggles so they didn't say anything.

During the debrief, we watched the cockpit tape of the NAVFLIR heads-down display. The image showed the runway, gravel strips, and parallel taxiways as straight features with slightly different shades of green. The tape clearly showed—and we confirmed it the next morning—I had lined up on the gravel between the runway and the taxiway and touched down on the crossing taxiway, midway between the runway and the parallel. This position was probably the only thing that saved me, because the ground leading up to and past that crossing taxiway was sloping gravel.

I had also knocked the top off a radar reflector that was on an eight-foot pole just beyond the crossing taxiway, which explained a mysterious triangular cut in the forward lift-improvement device on my aircraft.

How did I manage to land 200 feet to the right of centerline while being monitored by a LSS? The main reason was that I had convinced myself I was set up perfectly for

the runway based on misinterpreted visual cues and a lack of situational awareness. This incident highlighted a number of classic human factors and aircrew-coordination training items we talk about at every safety standdown. There are also several lessons learned that came from this incident.

We deviated from the brief by choosing to start with the precision RVLs instead of touch-and-goes on the second sortie, and the LSS remained abeam the intended point of landing instead of moving to a spot 2,000 feet down the runway. Positioning down the runway, which is more typical for precision RVLs in the daytime, allows the LSS to better monitor lineup.

The primary sensor during starlight conditions is the NAVFLIR. Despite the degraded condition of my HUD NAVFLIR picture, I pressed. I thought I could make do with the very limited capability of the NVGs in starlight conditions. We also continued despite the distraction from the ambient light coming from the tent city beside the airfield. These two problems combined to make an already difficult situation even worse.

After turning the taxiway lights on to go to the fuel pits, we never turned them off. This resulted in another set of lights that looked very similar to the chemlights through the NVGs. What I saw on final was the chemlights on my left side and the parallel taxiway lights on my right side, and had lined up between the two sets of lights. (The runway-remaining marker I had seen was actually a right-side marker, not a left-side marker.) Had I thought about it at the start of the sortie, I might have noticed the similarity between the taxiway lights and chemlights.

What I saw on final was the chemlights on my left side and the parallel taxiway lights on my right side, and had lined up between the two sets of lights.

Having the LSS on NVGs was a relatively new idea. The LSS could see my Harrier better, but because of the NVGs' narrow field of view he had a hard time telling where the aircraft was in relation to the runway centerline.

The laser pointer was easy to see on the NVGs, but in the brief, we had not really talked about how it would be used. The LSS had been marking the runway with the laser pointer, and his arm motion had continued the beam across the entire airfield. Since it showed up so well on the NVGs, it was easy to focus on. This detracted from cross-checking other references, but is probably the only reason I touched down on the crossing taxiway.

The two observers who were with the LSS thought something didn't look quite right but didn't say anything. They assumed the LSS had a better view of what was going on through the NVGs. If someone had said something to the LSS, he might have come off the NVGs, realized something was wrong, and called an earlier waveoff.

There are many other things that might have changed the course of events that night. I'm glad I touched down on the crossing taxiway instead of on the sloping gravel. I'm also glad the engine, despite being badly FODed, continued to run normally for more than 20 minutes. To this day, every time I show the NAVFLIR tape, I still shudder to think I truly believed I was landing on the runway until it was almost too late.

Maj. Tomassetti is working joint strike-fighter projects at the Naval Strike Aircraft Test Squadron at Patuxent.

Crew Test

by Lt. Roger Allenbaugh

AS A NAVAL AVIATOR, YOU ARE SOMETIMES tested to go beyond your personal limits for the sake of the mission. Whenever I encounter one of those situations, my gut feeling points me in the right direction to keep me safe. That instinct coupled with Mission ACES (aircraft, crew, environment, situation) is a powerful tool to assess changes to the mission and associated risks.

Our tasking was to fly an SSC mission under the control of one of the DDGs in the battle group. Two other LAMPS helicopters were also deployed to maintain the surface picture for the surface-warfare commander. The air-tasking order scheduled us from 1800 through 2400.

Preparing for this mission was no different than preparing for any night mission, including making sure we got enough rest. It's simple. I insist on adequate rest for any night hop. It stacks the deck in your favor when you are recovering during a pitch-black night, at the end of a double bag and at a time when instrument scan is everything. Who knows what other factors could add to your workload during a recovery. How about a loss of AFCS or a gyro failure? The last thing you want working against you is fatigue.

Our crew briefed the flight and launched to report on station with the destroyer. We spent a good portion of the flight identifying contacts of interest. We fueled aboard the DDG at 2115 and launched.

At 2245, the TAO asked what time we planned on returning to our ship for flight quarters. With 3+00 to splash and about 75 miles between us and our recovery deck, we replied we had flight quarters scheduled at 2345 for a 2400 recovery, and we would check off-station at 2300.

At 2300, our ASTAC told us the TAO wanted us to stand by to maintain radar coverage on two contacts. We reiterated our 2300 bingo time to return to mother. The ASTAC replied that Bravo India was requesting we hold the two contacts on radar until another aircraft reported on station. When we asked when the other aircraft would arrive, the ASTAC replied it could be as late as 0300.

Faced with the prospect of flying nine hours, with the last three hours after mid-

night, we assessed the risks. I asked the crew how they felt about flying into the night. The pilot and the sensor operator said they felt OK. What did I think? I thought the risk of taking the crew past midnight to support an exercise that did not officially start until 0800 the next morning was not value-added training.

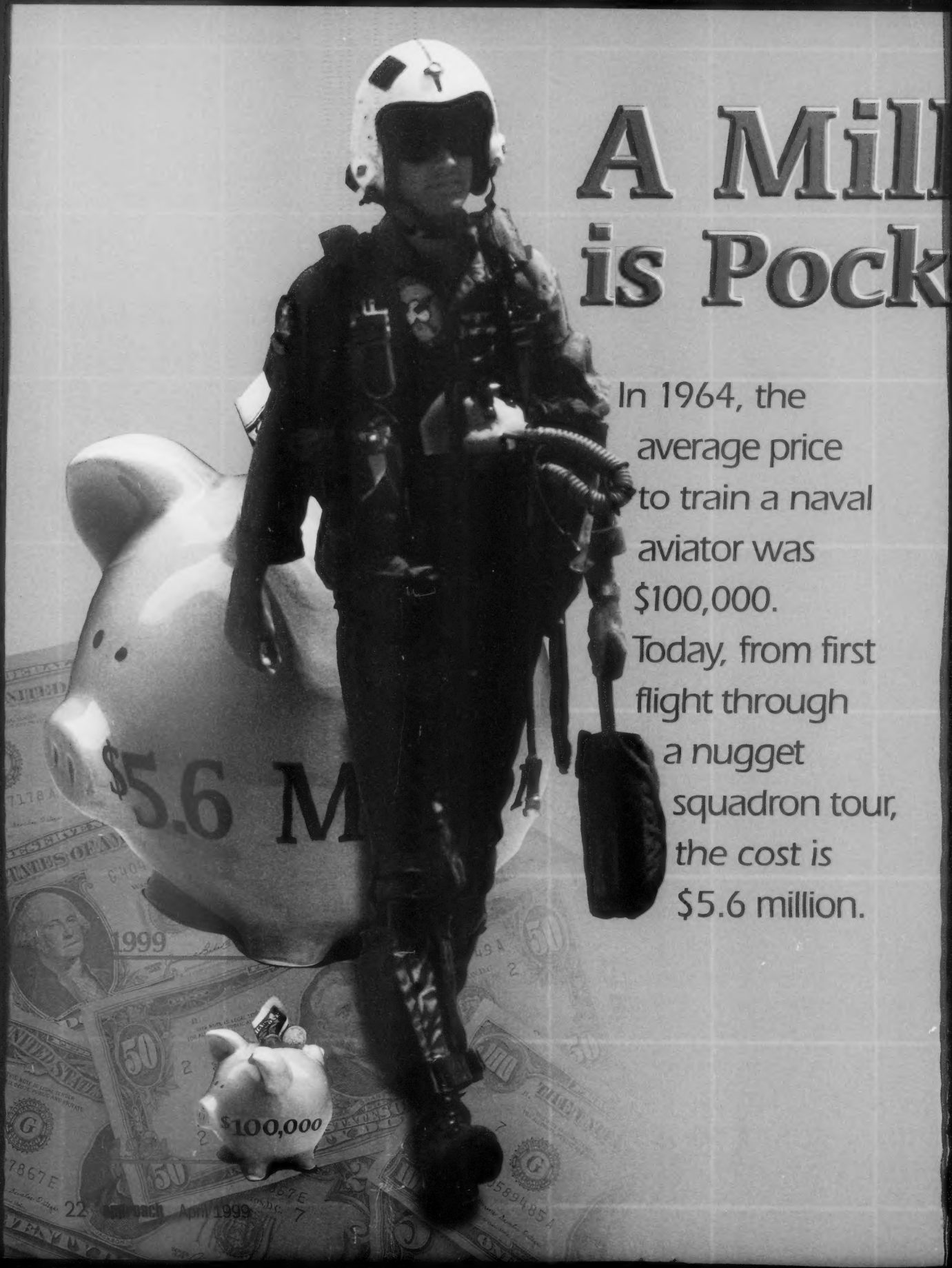
It was clear that this last-minute tasking arose to fill an unforeseen gap in the plan. Our aircraft was tasked after what appeared to be little consideration for human factors and crew day.

I decided to extend a half-hour, close our ship and recover. I cited crew day as the main reason we wouldn't extend beyond midnight. I argued the risks of pushing a six-hour event into nine hours to maintain radar contact were not ones we were willing to accept. The captain of our ship agreed and responded by closing the position of the contacts of interest (as well as our position) and picking up the radar picture. Our CO made it clear to Bravo India that his intention was to extend the recovery time by a half-hour in response to the tasking.

There are some definite questions we must ask when tasking pushes the limits of flexibility and ignores the effect on the flight crew. This incident indicates that risk management should be applied beyond the operator level. What kind of risk-assessment tools is the warfare commander using? When my aircrew and aircraft are being tasked during an exercise, it feels good to know that whoever is tasking us is considering things like crew day.

When we returned to the ship, the CO confirmed our belief that we were thrown into a bad position. In his words, the last-minute tasking was unprofessional. I learned that being assertive, making a decision, and maintaining a position are what the CO of the ship relies upon.

Lt. Allenbaugh flies with HSL-42's Det 7.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In 1964, the average price to train a naval aviator was $100,000. Today, from first flight through a nugget squadron tour, the cost is $5.6 million.
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$100,000

ion Dollars et Change

by Peter Mersky

AT THE BEGINNING OF THE OLD TV SHOW, "The Millionaire," tycoon John Beresford Tipton would give his faithful secretary Michael Anthony a check for a million dollars for some needy individual. Anthony would then find the lucky new millionaire, and the remainder of the show would depict how the recipient dealt with his or her new-found wealth. Of course, this was when a million dollars was a million dollars.

A million isn't what it used to be in naval aviation, either, and the increases haven't just been due to inflation. A little history lesson in economics shows how much more responsibility today's naval aviators assume when they sign for an aircraft. You won't get rich working for Uncle Sam, but you do get a chance to fly some of the world's most expensive hardware. The value of this exotic equipment has increased exponentially over the last 30 years—far beyond mere inflation.

For example, a student naval aviator in a T-2B in 1964 was flying an aircraft costing $741,000. In 1999 dollars, that's $3.9 million. In advanced training, our young SNA would fly a Grumman TF-9J, a swept-wing two-seat version of the single-seat Cougar. It was flown by most of the fleet and the FMF from carriers and shore stations, and was a favorite of the Blue Angels. The TF-9J cost $400,000, or $2.1 million today.

If he made it to a fleet fighter squadron flying the Phabulous Phantom, he might revel in the knowledge he was jockeying around a $1.5 million chunk of metal, adjusted to $7.5 million.

The long-lived SH-3 Sea King ran a cool $855,500 in 1963, or in 1999 terms, $4.5 million. The E-2A Hawkeye hummed in at $5.8 million in 1964, or $30.5 million today. In 1960, a P-2 averaged $1.5 million ($8.3 million today).

That was history. Today, the newest trainer in naval aviation, the T-45, runs $19.5 million. The keys to an FA-18C require $31.3 million. A P-3C runs $55 million. An SH-60F costs $18.3 million, and the current edition of the E-2C comes with a price tag of—yes, believe it!—$68.6 million.

So, after adjusting for inflation, and mission and system upgrades, the aircraft you fly now cost from two to six times as much than they did three decades ago. The investment in training to help you survive and bring back these multi-million-dollar aircraft has increased even more.

In 1964, the average price to train a naval aviator was $100,000. Today, from first flight through a nugget squadron tour, the cost is $5.6 million. In 1964, a death benefit ranged from $5,000 to $15,000, depending on the service member's choice. Now, 35 years later, SGLI pays $200,000 to survivors. And it's still not really enough, is it?

Thanks to Lt. Amy Derrick of CHINFO, Mr. Bill Geoghegan of the Cost Department at NAVAIR, and Mr. Tom Dewland in the office of the Deputy Commander for Acquisitions and Operations at NAVAIR for their help in researching numbers.

Simo Run (

The two aircraft appeared to b(

by Lt. Ryan C. Smith

IT WAS THE NEXT TO LAST RECOVERY on one of those moonless, pitching-deck nights that are tough to wave and even harder to fly. We were catching the last few aircraft when things got interesting.

We had two S-3s and two SH-60s left, and we could see that CATCC was sequencing them all onto the final bearing as usual. After catching the first S-3, we shifted our scan out to the last S-3 at what we thought was about two miles. We immediately noticed the lack of wing-tip lighting and called the S-3.

"Seven XX, check externals full bright."

The crew replied they were having problems with the external lighting.

As the aircraft approached, we began to have a hard time telling which of the two light patterns was the closest. The two aircraft appeared to be right on top of each other. From my vantage point as a "Back Row Bob," I could almost see the huge question mark appearing over the controlling LSO's head.

Suddenly, the closest light pattern made a hard, right turn from the in-the-middle position, and we saw that it was the first SH-60B breaking off its approach.

The S-3 with the dark wing tips was the second aircraft, and it was at the ball-call position at the time of the helo's bat-turn waveoff. With merely a half mile between

ın the Ball

right on top of each other.

aircraft, CATCC's late catch of this sequencing error saved the lives of at least eight aircrew, as well as any flight-deck crewmen who would have been hit by debris.

There were some valuable learning points for the CATCC controller and other people, too.

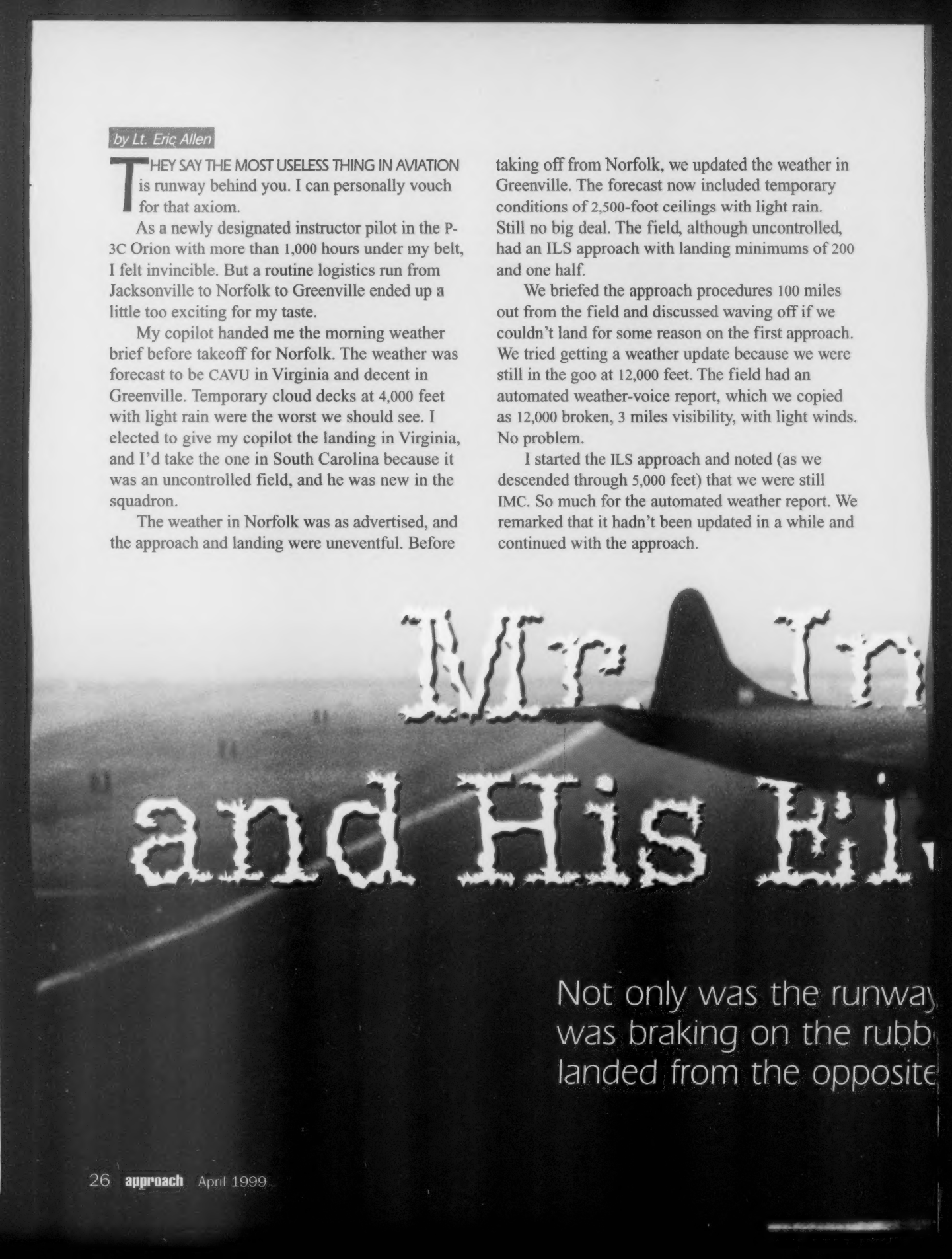
Neither aircrew can be faulted. Both aircraft were under positive IFR control. The helicopter pilots might have noticed the two other sets of lights farther out on the final bearing, but that's asking quite a bit when you're preparing for a night landing on a carrier. The S-3 crew couldn't have noticed the helicopter being run down in the approach, because the carrier-deck lighting in the background washed out the helo's position lights. Furthermore, the S-3 crew had their hands full with the CV-1 approach.

This incident also emphasizes the importance of the LSO's situational awareness at night. You'd like to think CATCC would deliver the approaching aircraft to the ship in a logical manner. However, this event just goes to show that the LSOs must always back up the controllers. Every LSO knows the standard lighting configuration of air-wing aircraft; a non-standard lighting display causes problems. The S-3 had been flying with burned-out wing-tip lights for the last 24 hours.

Lt. Smith flies with VFA-27.

by Lt. Eric Allen

Mr. Tri and His Hi



Not only was the runwa
was braking on the rubb
landed from the opposite

THEY SAY THE MOST USELESS THING IN AVIATION is runway behind you. I can personally vouch for that axiom.

As a newly designated instructor pilot in the P-3C Orion with more than 1,000 hours under my belt, I felt invincible. But a routine logistics run from Jacksonville to Norfolk to Greenville ended up a little too exciting for my taste.

My copilot handed me the morning weather brief before takeoff for Norfolk. The weather was forecast to be CAVU in Virginia and decent in Greenville. Temporary cloud decks at 4,000 feet with light rain were the worst we should see. I elected to give my copilot the landing in Virginia, and I'd take the one in South Carolina because it was an uncontrolled field, and he was new in the squadron.

The weather in Norfolk was as advertised, and the approach and landing were uneventful. Before taking off from Norfolk, we updated the weather in Greenville. The forecast now included temporary conditions of 2,500-foot ceilings with light rain. Still no big deal. The field, although uncontrolled, had an ILS approach with landing minimums of 200 and one half.

We briefed the approach procedures 100 miles out from the field and discussed waving off if we couldn't land for some reason on the first approach. We tried getting a weather update because we were still in the goo at 12,000 feet. The field had an automated weather-voice report, which we copied as 12,000 broken, 3 miles visibility, with light winds. No problem.

I started the ILS approach and noted (as we descended through 5,000 feet) that we were still IMC. So much for the automated weather report. We remarked that it hadn't been updated in a while and continued with the approach.

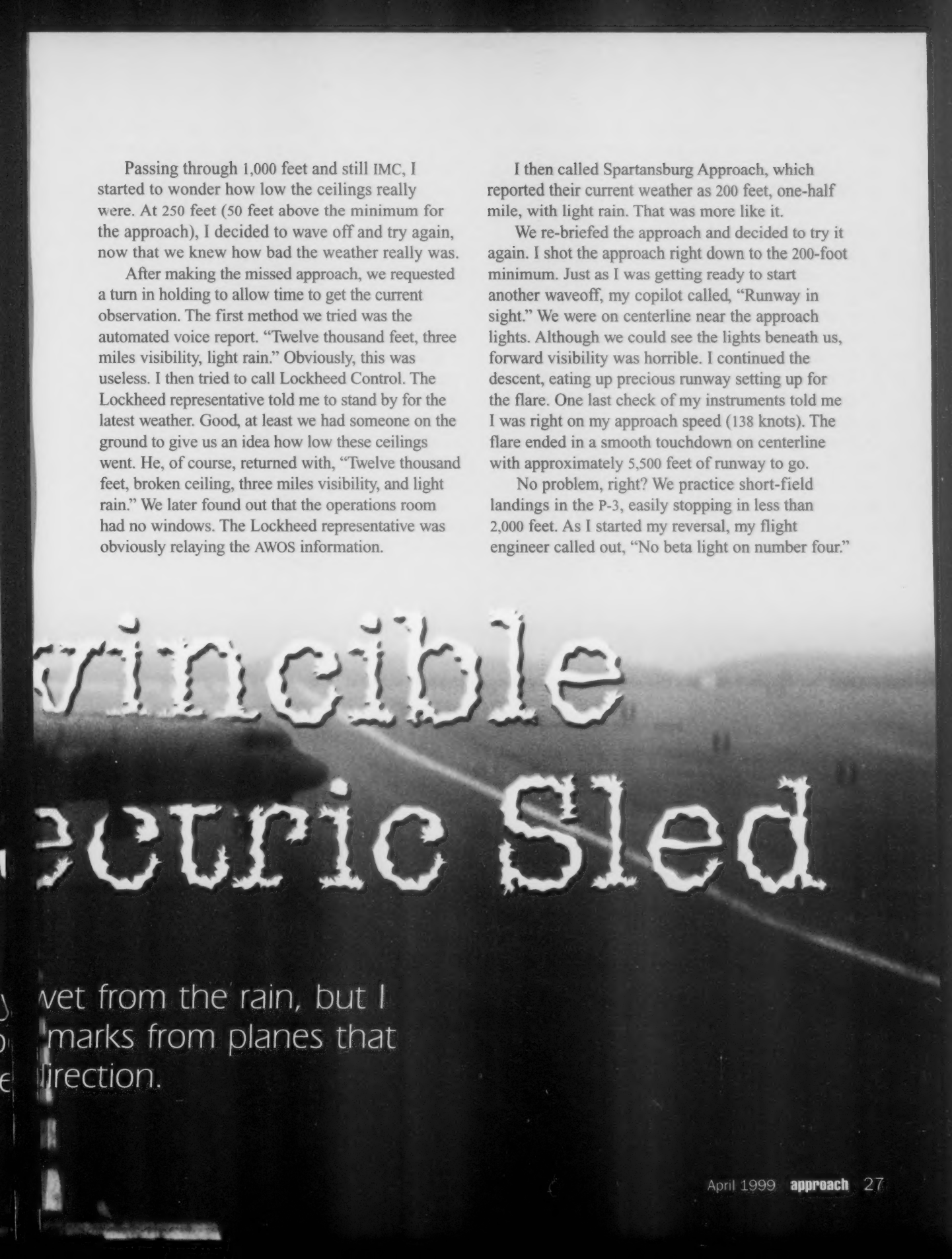
Passing through 1,000 feet and still IMC, I started to wonder how low the ceilings really were. At 250 feet (50 feet above the minimum for the approach), I decided to wave off and try again, now that we knew how bad the weather really was.

After making the missed approach, we requested a turn in holding to allow time to get the current observation. The first method we tried was the automated voice report. "Twelve thousand feet, three miles visibility, light rain." Obviously, this was useless. I then tried to call Lockheed Control. The Lockheed representative told me to stand by for the latest weather. Good, at least we had someone on the ground to give us an idea how low these ceilings went. He, of course, returned with, "Twelve thousand feet, broken ceiling, three miles visibility, and light rain." We later found out that the operations room had no windows. The Lockheed representative was obviously relaying the AWOS information.

I then called Spartansburg Approach, which reported their current weather as 200 feet, one-half mile, with light rain. That was more like it.

We re-briefed the approach and decided to try it again. I shot the approach right down to the 200-foot minimum. Just as I was getting ready to start another waveoff, my copilot called, "Runway in sight." We were on centerline near the approach lights. Although we could see the lights beneath us, forward visibility was horrible. I continued the descent, eating up precious runway setting up for the flare. One last check of my instruments told me I was right on my approach speed (138 knots). The flare ended in a smooth touchdown on centerline with approximately 5,500 feet of runway to go.

No problem, right? We practice short-field landings in the P-3, easily stopping in less than 2,000 feet. As I started my reversal, my flight engineer called out, "No beta light on number four."



[Lack of a beta light means that reverse thrust might not be available on No. 4.—Ed.]

I acknowledged his call and smoothly continued my reversal. NATOPS dictates that we continue reversing on all engines while being alert for a swerve. If we swerve, we secure the engine that has no beta light.

As I cautiously brought the power levers farther back, I noticed a slight swerve to the left. I immediately called, "E-handle number four!" My flight engineer looked at me with wide eyes, and I repeated the call. More runway rolled by. Still no problem. The FE pulled the E-handle, and the engine shut down.

The plane naturally wanted to veer to the left with asymmetric reversal. I used the yoke and rudder pedals to keep the plane on centerline. As I continued my 3-engine reversal, the plane appeared to be slowing normally. Decelerating to approximately 60 to 75 knots, we had a little less than 2,000 feet of runway left. Still no major worries.

Then as I touched the brakes for the first time—it felt like they weren't working! Not only was the runway wet from the rain, but I was braking on the rubber marks from planes that had landed from the opposite direction. This is the part of the runway with the worst traction. Our NATOPS procedures call for us to use intermittent braking in this situation, which I was doing.

As the end of the runway approached, it became harder to use intermittent braking. Although we were going something less than 50 knots, we were still hydroplaning. As slow as we were sliding, I could not believe we had not stopped. The hydroplaning made it feel like the brakes had absolutely no effect.

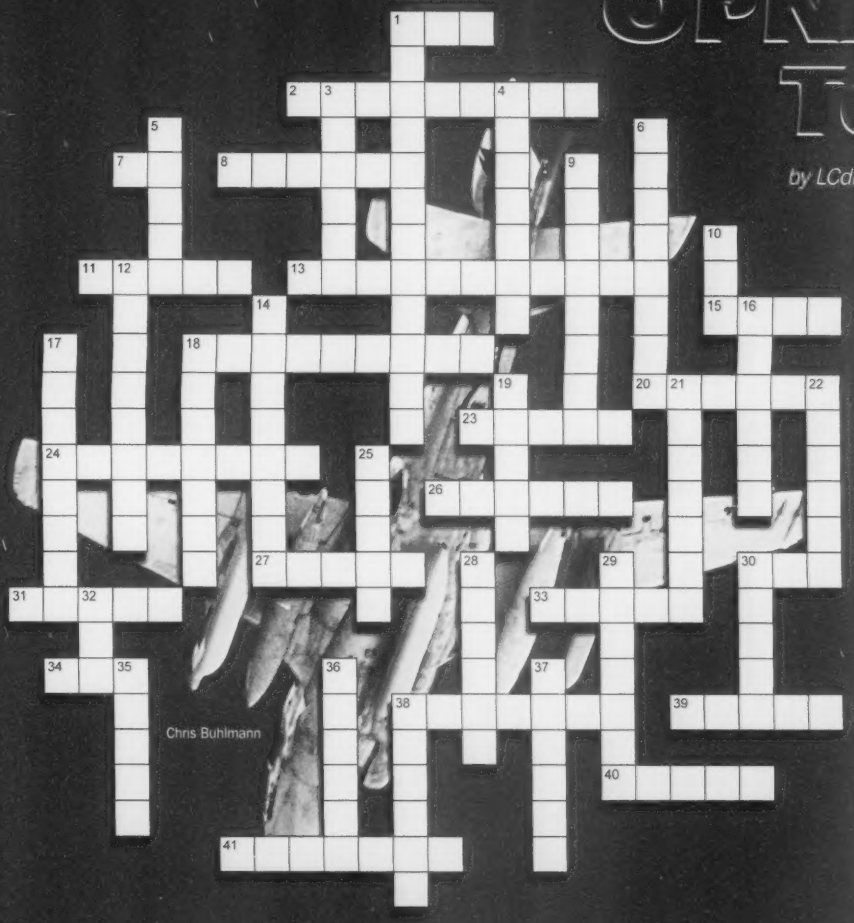
I was now standing on the brakes, which, of course, locked. One brake either locked first or grabbed a part of dry runway, and the plane skidded to a quick stop. When my heart finally descended from my throat, I realized we had stopped 30 to 40 feet from the end of the runway and about 15 to 25 feet from the edge.

We left Greenville after a tire change (the left tires were missing large chunks from the skid at the end) and some maintenance on No. 4. I had a new appreciation for the importance of landing the aircraft on the numbers, getting an accurate weather picture, and testing the brakes before it's too late.

Lt. Allen flies with VP-16.

OPNAV 3710 Test 1

by LCdr. Frank Mellotti, VAQ-133



Across

1. Who writes OPNAV?
2. Custodian who must approve takeoff or landings at closed fields
7. Do you change the time zone letter on yellow sheet for daylight savings?
8. Waiver authority for physical standards
11. Abbreviation used on form to describe initial type of physiology training (two words)
13. Possible NATOPS grade
15. EA-6B Controlling Custodian
18. V-22
20. Now required by OPNAV 3710
23. Mandatory
24. NATOPS jacket must be reviewed when?
26. Route of flight established by users and ARTCC identified by coded name
27. Special operations personnel
30. Optional
31. Prohibited if you wear oxygen mask routinely
33. Required equipment
34. One type of precision approach category
38. Kind of pilot who can take off in any weather
39. Pilot gets one if he lets instrument card lapse (Navy)
40. Heat required for flight by 3710
41. Do not perform these maneuvers in Class B, C, or D airspace

Solution will be published in the May issue.

Down

1. Flight that doesn't remain in local flying area
3. Number of 3710 wickets to meet for Cross Country
4. Manual update often initiated by an urgent change recommendation
5. Current version of OPNAV 3710.7
6. Noise sensitive farm
9. Sunset type used to describe lighting requirements
10. Must not change on stopover flight plan and
10. Assigned responsibility for safe & orderly conduct of the flight
12. Your logbook is your _____ property
14. Intake duct must be declared _____ (two words) before starting
16. One agency that validates approaches for DOD use
17. Strange word used to describe fuel purchase exemption
18. Products prohibited in all Naval aircraft
19. DD 365-4 originals shall be retained for X months
21. Official document of pilot history (two words)
22. Chapter that directs pilots to "aviate, navigate, and communicate"
25. Who must approve our instrument ground syllabus?
28. Greenie board foe
29. Cross-country callsigns must be IAW
30. Military assumes responsibility for separation of aircraft
32. type altitude for fuel jettison (non-emergency)
35. Number of deviations from FAR part 91 permitted by 3710.7
36. Duty in a flying status involving operational or training flights
37. Bad set of orders
38. Whose 5720.44 instruction to consult before participating in a celebration

BROWNSHOES IN ACTION COMIX

"The kind real aviators like"
by Cdr. Ward Carroll